

Application Serial No. 09/765,965 - Filed January 19, 2001

### **IN THE CLAIMS**

A list of the pending claims is presented below.

1. (Previously Presented) A method for processing broadcasts, comprising:
  - receiving a broadcast of a program, the broadcast containing a plurality of perspectives of the program, each of the perspectives providing a view of a given scene from a different angle;
  - presenting a first perspective of the plurality of perspectives to a viewer, said first perspective comprising a first perspective of a portion of the program;
  - storing at least one of the plurality of perspectives;
  - providing input from a viewer which indicates a desire to replay the portion of the program from a second perspective of the plurality of perspectives;
  - identifying in the first perspective a first point in time in the program which corresponds to the beginning of said portion, responsive to the input;
  - automatically determining a second point in time in the second perspective, wherein the second point in time comprises an approximation of the first point in time in the program; and
  - presenting the portion of the program from the second perspective to the viewer beginning at the second point in time.
2. (Original) The method as recited in claim 1, wherein presenting the first perspective and storing are performed simultaneously.
3. (Original) The method as recited in claim 1, wherein storing the at least one of the plurality of perspectives is performed automatically.
4. (Original) The method as recited in claim 1, wherein presenting at least one of the plurality of perspectives includes presenting at least one of the stored perspectives.

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5. (Original) The method as recited in claim 4, wherein presenting at least one of the plurality of perspectives and storing are performed simultaneously.
6. (Previously Presented) The method as recited in claim 1, further comprising periodically storing meta-data corresponding to each of one or more of the received plurality of perspectives of the program, said meta-data comprising at least time and offset information for each of the corresponding one or more plurality of perspectives.
7. (Previously Presented) The method as recited in claim 1, wherein receiving the broadcast includes simultaneously receiving a plurality of related video streams, each stream including one of the perspectives.
8. (Previously Presented) The method as recited in claim 6, wherein identifying the first point in time in the first perspective comprises identifying a first offset in a stored file corresponding to the first perspective.
9. (Original) The method as recited in claim 1, wherein presenting the first perspective includes presenting the first perspective in one window of a display and presenting at least one of the plurality of perspectives includes presenting a second perspective from the plurality of stored perspectives in a different window of the display.
10. (Original) The method as recited in claim 1, wherein storing at least one of the plurality of perspectives includes storing the perspectives in at least one circular buffer.
11. (Previously Presented) The method as recited in claim 8, wherein determining the second point in time in the second perspective comprises locating an offset in the second perspective which is near the first offset.
12. (Previously Presented) The method as recited in claim 8, wherein determining the second point in time in the second perspective comprises:

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searching stored meta-data to identify two consecutive offsets corresponding to the first perspective, such that the interval represented by the two consecutive offsets includes the first offset;  
utilizing a stored time corresponding to each of the two consecutive offsets to determine an approximated point in time;  
searching stored meta-data to identify two consecutive times corresponding to the second perspective, such that the interval represented by the two consecutive times includes the approximated point in time;  
utilizing a stored offset corresponding to each of the two consecutive times to determine an approximated offset; and  
locating an offset in the second perspective which is near the approximated offset.

13. (Previously Presented) The method as recited in claim 11, wherein the plurality of perspectives of the program comprise MPEG data streams, and wherein the offset in the second perspective which is near the first offset corresponds to an MPEG I-frame.

14. (Previously Presented) The method as recited in claim 12, wherein the plurality of perspectives of the program comprise MPEG data streams, and wherein the offset in the second perspective which is near the approximated offset corresponds to an MPEG I-frame.

15. (Previously Presented) A method for playing a multi-perspective program comprising:

receiving a broadcast of the program, the broadcast including a plurality of perspectives of the program, each of the perspectives providing a view of a given scene from a different angle;  
recording at least one of the plurality of perspectives in a storage device;  
sending a first perspective of the plurality of perspectives to a display, said first perspective comprising a first perspective of a portion of the program;  
providing input from a viewer which indicates a desire to replay the portion of the program from a second perspective of the plurality of perspectives;

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identifying in the first perspective a first point in time which corresponds to a beginning of the portion of the program, responsive to the input; automatically determining a second point in time in the second perspective, wherein the second point in time comprises an approximation of the first point in time in the program; and replaying the portion of the program from the second perspective beginning at the second point in time by sending the second perspective of the plurality of perspectives from the storage device to the display.

16. (Previously Presented) The method as recited in claim 15, further comprising periodically storing meta-data corresponding to each of one or more of the received plurality of perspectives of the program, said meta-data comprising at least time and offset information for each of the corresponding one or more plurality of perspectives, and wherein identifying the first point in time in the first perspective comprises identifying a first offset in a stored file corresponding to the first perspective.

17. (Original) The method as recited in claim 15, further comprising sending the second perspective to one window in the display to play the portion of the program from the second perspective concurrently with sending the first perspective to a different window in the display.

18. (Previously Presented) The method as recited in claim 16, wherein determining the second point in time in the second perspective comprises locating an offset in the second perspective which is near the first offset.

19. (Original) The method as recited in claim 15, wherein determining the second point in time in the second perspective comprises:

searching stored meta-data to identify two consecutive offsets corresponding to the first perspective, such that the interval represented by the two consecutive offsets includes the first offset;

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utilizing a stored time corresponding to each of the two consecutive offsets to  
determine an approximated point in time;  
searching stored meta-data to identify two consecutive times corresponding to the  
second perspective, such that the interval represented by the two  
consecutive times includes the approximated point in time;  
utilizing a stored offset corresponding to each of the two consecutive times to  
determine an approximated offset; and  
locating an offset in the second perspective which is near the approximated offset.

20. (Previously Presented) A system for recording a broadcast including a plurality of perspectives of a program, each of the perspectives providing a view of a given scene from a different angle, the system comprising:  
a receiver operable to receive the broadcast, the broadcast including at least one program;  
a storage device coupled to the receiver;  
a processor operable to:  
present at least a first perspective of the plurality of perspectives to a viewer, said  
first perspective comprising a first perspective of a portion of the program;  
record at least one of the plurality of perspectives in the storage device;  
receive input from a viewer which indicates a desire to replay the portion of the  
program from a second perspective of the plurality of perspectives;  
identify in the first perspective a first point in time in the program which  
corresponds to the beginning of said portion, in response to the input; and  
automatically determine a second point in time in the second perspective, wherein  
the second point in time comprises an approximation of the first point in  
time in the program; and  
present the portion of the program from the second perspective to the viewer  
beginning at the second point in time.

21. (Original) The system as recited in claim 20, further configured to record the perspectives automatically.

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22. (Original) The system as recited in claim 20, further configured to present the recorded perspectives to the viewer without interrupting the recording of the broadcast.
23. (Original) The system as recited in claim 20, wherein the receiver is a set top box.
24. (Previously Presented) The system as recited in claim 22, wherein the storage device is contained within the set top box or is removably coupled to the set top box.
25. (Previously Presented) The system as recited in claim 20, further comprising periodically storing meta-data corresponding to each of one or more of the received plurality of perspectives of the program, said meta-data comprising at least time and offset information for each of the corresponding one or more plurality of perspectives, and wherein identifying the first point in time in the first perspective comprises identifying a first offset in a stored file corresponding to the first perspective.
26. (Previously Presented) The system as recited in claim 20, wherein the storage device is selected from the group consisting of: a magnetic disk, an optical disk, and a flash memory.
27. (Previously Presented) The system as recited in claim 25, wherein determining the second point in time in the second perspective comprises locating an offset in the second perspective which is near the first offset.
28. (Previously Presented) The system as recited in claim 25, wherein determining the second point in time in the second perspective comprises:
- searching stored meta-data to identify two consecutive offsets corresponding to the first perspective, such that the interval represented by the two consecutive offsets includes the first offset;
  - utilizing a stored time corresponding to each of the two consecutive offsets to determine an approximated point in time;

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searching stored meta-data to identify two consecutive times corresponding to the second perspective, such that the interval represented by the two consecutive times includes the approximated point in time; and  
utilizing a stored offset corresponding to each of the two consecutive times to determine an approximated offset;  
locating an offset in the second perspective which is near the approximated offset.

29. (Original) The system as recited in claim 20, wherein the receiver comprises at least one tuner.

30. (Original) The system as recited in claim 29, wherein the receiver comprises a demultiplexer and a processor.

31. (Previously Presented) A system for presenting broadcasts, comprising:  
a receiver configured to receive a broadcast including a plurality of perspectives of a program, each of the perspectives providing a view of a given scene from a different angle;  
a storage device for storing at least one of the plurality of perspectives; and  
a processor configured to present a first perspective to a viewer while presenting at least a second, stored perspective to the viewer;  
wherein in presenting the second, stored perspective, the processor is configured to:  
receive input from a viewer which indicates a desire to replay a portion of the program from a second perspective of the plurality of perspectives;  
identify in the first perspective a first point in time in the program which corresponds to the beginning of said portion, responsive to the input;  
automatically determine a second point in time in the second perspective, wherein the second point in time comprises an approximation of the first point in time in the program; and  
present the portion of the program from the second, stored perspective beginning at the second point in time.

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32. (Original) The system as recited in claim 31, wherein the first perspective is a stored perspective.

33. (Original) The system as recited in claim 31, wherein the storage device is configured to store the at least one perspective automatically.

34. (Original) The system as recited in claim 31, further configured to store the at least one perspective simultaneously with presenting the first perspective.

35. (Original) The system as recited in claim 31, further configured to store the at least one perspective simultaneously with presenting the second perspective.

36. (Previously Presented) The system as recited in claim 31, wherein the processor is further configured to periodically store meta-data corresponding to each of one or more of the received plurality of perspectives of the program, said meta-data comprising at least time and offset information for each of the corresponding one or more plurality of perspectives, and wherein identifying the first point in time in the first perspective comprises identifying a first offset in a stored file corresponding to the first perspective.

37. (Original) The system as recited in claim 36, wherein the processor is configured to present the first perspective in a first window on the display and the second perspective in a second window on the display.

38. (Original) The system as recited in claim 37, wherein one of the first and second windows is nested inside the other of the first and second windows.

39. (Previously Presented) The system as recited in claim 31, wherein the receiver is configured to simultaneously receive a plurality of audio and/or video streams associated with the plurality of perspectives.



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40. (Previously Presented) The system as recited in claim 39, wherein each of the audio and/or video streams includes one of the perspectives.

41. (Previously Presented) The system as recited in claim 36, wherein determining the second point in time in the second perspective comprises locating an offset in the second perspective which is near the first offset.

42. (Previously Presented) The system as recited in claim 36, wherein determining the second point in time in the second perspective comprises:

searching stored meta-data to identify two consecutive offsets corresponding to the first perspective, such that the interval represented by the two consecutive offsets includes the first offset;  
utilizing a stored time corresponding to each of the two consecutive offsets to determine an approximated point in time;  
searching stored meta-data to identify two consecutive times corresponding to the second perspective, such that the interval represented by the two consecutive times includes the approximated point in time; and  
utilizing a stored offset corresponding to each of the two consecutive times to determine an approximated offset;  
locating an offset in the second perspective which is near the approximated offset.

43. (Original) The system as recited in claim 31, wherein the storage device includes at least one circular buffer for storing at least one of the plurality of perspectives.

44. (Original) The system as recited in claim 31, wherein the processor is configured to search at least one of the stored perspectives.

45. (Previously Presented) A computer program product for processing broadcasts, comprising a computer usable medium having machine readable code embodied therein for:

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receiving a broadcast of a program, the broadcast containing a plurality of perspectives of the program, each of the perspectives providing a view of a given scene from a different angle;  
presenting a first perspective of the plurality of perspectives to a viewer, said first perspective comprising a first perspective of a portion of the program;  
storing at least one of the plurality of perspectives;  
receiving input from a viewer which indicates a desire to replay the portion of the program from a second perspective of the plurality of perspectives;  
identifying in the first perspective a first point in time in the program which corresponds to the beginning of said portion, responsive to the input;  
automatically determining a second point in time in the second perspective, wherein the second point in time comprises an approximation of the first point in time in the program; and  
presenting the portion of the program from the second perspective to the viewer beginning at the second point in time.

46. (Original) The computer program product as recited in claim 45, wherein the presenting the first perspective and storing are performed simultaneously.

47. (Previously Presented) The computer program product as recited in claim 45, further comprising periodically storing meta-data corresponding to each of one or more of the received plurality of perspectives of the program, said meta-data comprising at least time and offset information for each of the corresponding one or more plurality of perspectives, and wherein identifying the first point in time in the first perspective comprises identifying a first offset in a stored file corresponding to the first perspective.

48. (Original) The computer program product as recited in claim 45, wherein presenting at least one of the plurality of perspectives includes presenting at least one of the stored perspectives.

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49. (Original) The computer program product as recited in claim 48, wherein presenting at least one of the plurality of perspectives and storing at least one of the plurality of perspectives are performed simultaneously.

50. (Previously Presented) The computer program product as recited in claim 47, wherein determining the second point in time in the second perspective comprises locating an offset in the second perspective which is near the first offset.

51. (Previously Presented) The computer program product as recited in claim 45, wherein receiving the broadcast includes simultaneously receiving a plurality of related audio and/or video streams, each stream including one of the perspectives.

52. (Previously Presented) The computer program product as recited in claim 47 , wherein determining the second point in time in the second perspective comprises:

- searching stored meta-data to identify two consecutive offsets corresponding to the first perspective, such that the interval represented by the two consecutive offsets includes the first offset;
- utilizing a stored time corresponding to each of the two consecutive offsets to determine an approximated point in time;
- searching stored meta-data to identify two consecutive times corresponding to the second perspective, such that the interval represented by the two consecutive times includes the approximated point in time; and
- utilizing a stored offset corresponding to each of the two consecutive times to determine an approximated offset;
- locating an offset in the second perspective which is near the approximated offset.

53. (Original) The computer program product as recited in claim 45, wherein presenting the first perspective includes presenting the first perspective in one window of a display and presenting at least one of the plurality of perspectives includes presenting a second perspective from the plurality of stored perspectives in a different window of the display.

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54. (Original) The computer program product as recited in claim 45, wherein storing at least one of the plurality of perspectives includes storing the perspectives in at least one circular buffer.

55. (Previously Presented) The method as recited in claim 12, wherein receiving the broadcast includes simultaneously receiving a plurality of related video streams, each stream including one of the perspectives, wherein said streams do not have a same bit rate.

56. (Previously Presented) The method as recited in claim 55, wherein said locating comprises performing interpolation.